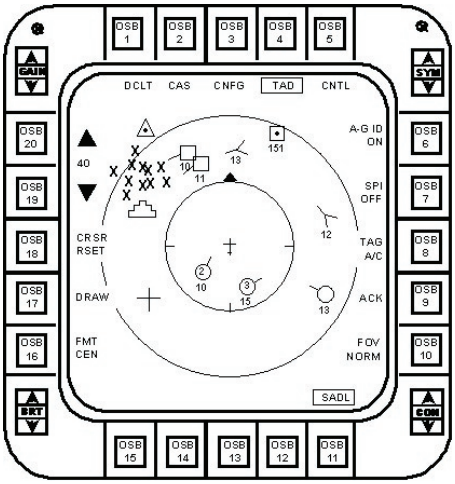
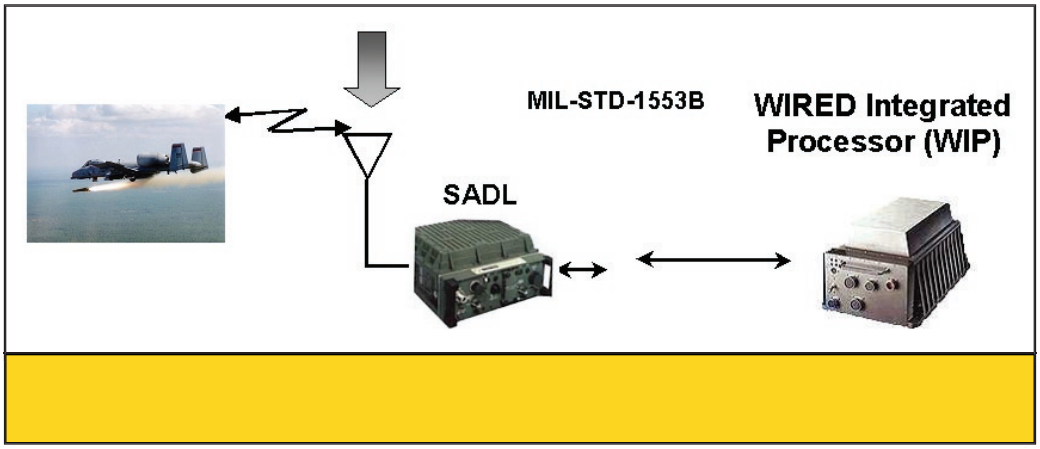
Air Force Research Laboratory|AFRL

Science and Technology for Tomorrow's Air and Space Force

Success Story

SITUATION AWARENESS DATA LINK RADIO PROVIDES WARFIGHTERS WITH A SECURE COMMUNICATIONS SYSTEM





The Situation Awareness Data Link (SADL) radio system provides a secure, jam resistant air-to-air network for up to four flights of four aircraft each with automatic relaying for increased mobility and range. F-16 and A-10 aircraft use this system to provide close air and combat search and rescue mission support.

Air Force Research Laboratory
Wright-Patterson AFB OH

Accomplishment

Scientists at the Sensors Directorate demonstrated the first integrated laboratory demonstration of a radio system linking of an AC-130 Gunship aircraft with close air support aircraft and ground assets. The demonstration fully integrated a "point and click" operator interface for the radio link requiring no additional aircrew members. The SADL radio is an airborne version of the Army Enhanced Position Location Reporting System radio that provides a wireless data communications backbone for the Army's tactical Internet. The major benefit of the SADL is that the two systems operate together, providing warfighters with a secure communications system.

Background

The AC-130 SADL interface uses open systems architecture techniques. The software consists of a SADL interface module using 3,600 lines of code and a SADL display module using 5,000 lines of code.

The combined SADL software interface and display executable module is 5,870 Kbytes in size and uses 6 Mbytes on the integrated Wind Tunnel Integrated Real-Time Information in the Cockpit / Real-Time Information out of the Cockpit Experiments and Demonstrations (WIRED) processor-embedded PowerPC. Directorate scientists performed a hardware-in-the-loop demonstration where the WIRED integrated processor system interfaced with a SADL radio system, simulating one aircraft.

Directorate scientists then used a workstation to connect the second SADL radio system, simulating a two-ship formation. Next, the scientists performed a close-air-support mission with ground friendlies identified on the SADL tactical awareness display along with other aircraft and targets.

The AC-130 aircraft provided forward air controller functions and transferred A-10 targets digitally by the SADL radio to the simulated A-10 aircraft. In addition, the AC-130 aircraft demonstrated close air support nine-line message transfer.

Sensors
Support to the Warfighter

Additional information

To receive more information about this or other activities in the Air Force Research Laboratory, contact TECH CONNECT, AFRL/XPTC, (800) 203-6451 and you will be directed to the appropriate laboratory expert. (02-SN-16)